

REMARKS/ARGUMENTS

I. General Remarks and Disposition of the Claims.

Please consider the application in view of the following remarks. Applicant thanks the Examiner for his careful consideration of this application.

At the time of the Office Action, claims 24-57 were pending. Claims 24-31, 33-48, and 50-57 are rejected. Claims 32 and 49 are objected to. Claims 24-26, 30, 32, 34, 36, 37, 39, 41-43, 47, 49, 51, 53, 54, and 56 have been amended herein. Claims 81 and 82 are new. Applicant respectfully requests that the above amendments be entered, and further requests reconsideration in light of the amendments and remarks contained herein. Antecedent basis for these amendments can be found throughout the specification, e.g. ¶[0020]-¶[0021].

II. Remarks Regarding Information Disclosure Statement

Because the Examiner has requested that Applicant in some way narrow the number of references cited in the information disclosure statements, Applicant submits herein a listing of references in the table below. However, it is Applicant's position that all references included in the originally filed information disclosure statements may be relevant. The following references are directed to subterranean applications and may be more relevant than other references cited, although Applicant makes no representation that those references submitted in the information disclosure statements but not listed in the table below are not relevant to patentability.

U.S. PATENT DOCUMENTS					
DOCUMENT NO.	ISSUE/PUB. DATE	NAME	CLASS	SUB CLASS	FILING DATE
2,703,316	3/1/1955	Schneider	260	78.3	
3,272,650	9/13/1966	MacVittie	134	7	2/21/1993
3,681,287	8/1/1972	Brown, et al	260	67	3/3/1971
3,784,585	1/8/1974	Schmitt et al.	260	861	10/21/1971
3,819,525	6/25/1974	Hattenbrun	252	132	8/21/1972
3,912,692	10/14/1975	Casey et al	260	78.3	
4,127,173	11/28/1978	Watkins, et al.	166	276	7/28/1977
4,546,012	10/8/1985	Brooks	427	213	4/26/1984
4,572,803	Feb-86	Yamazoe et al	534	16	
4,675,140	6/23/1987	Sparks et al.	264	4.3	5/6/1985

4,716,964	1/5/1988	Erbstoesser et al.	166	284	12/10/1986
4,789,105	12/6/1988	Hosokawa et al.	241	67	4/16/1987
4,797,262	1/10/1989	Dewitz	422	142	6/3/1987
4,846,118	6/27/1989	Lai et al.	524	555	6/19/1987
4,886,354	12/12/1989	Welch et al.	356	70	5/6/1988
5,142,023	8/25/1992	Gruber et al.	528	354	1/24/1992
5,173,527	12/22/1992	Calve	524	74	5/15/1992
5,216,050	6/1/1993	Sinclair	524	108	
5,247,059	9/21/1993	Gruber et al.	528	354	8/24/1992
5,306,998	10/23/2001	Kimura et al.	528	12	2/24/2000
5,359,026	10/25/1994	Gruber	528	354	7/30/1993
5,368,102	11/29/1994	Dewprashad et al.	166	278	9/9/1993
5,381,864	1/17/1995	Nguyen et al	166	280	11/12/1993
5,422,183	6/6/1995	Sinclair et al.	428	403	6/1/1993
5,423,381	6/13/1995	Suries et al.	166	295	6/13/1994
5,475,080	12/15/1995	Gruber et al.	528	354	3/22/1993
5,484,881	1/16/1996	Gruber et al.	528	54	8/23/1993
5,498,280	3/12/1996	Fistner et al	106	19	
5,505,787	4/9/1996	Yamaguchi	134	4	1/28/1994
5,536,807	7/16/1996	Gruber et al.	528	354	8/23/1993
5,545,824	8/13/1996	Stengel et al.	524	590	7/20/1995
5,594,095	1/14/1997	Gruber et al.	528	354	7/27/1994
5,609,207	3/11/1997	Dewprashad et al.	166	276	12/22/1995
5,670,473	9/23/1997	Scepanski	510	445	6/6/1995
5,698,322	12/16/1997	Tsai et al.	428	373	12/2/1996
5,732,364	3/24/1998	Kalb et al	588	8	
5,830,987	11/3/1998	Smith	528	332	3/11/1997
5,833,361	11/10/1998	Funk	366	80	9/7/1995
5,837,785	11/17/1998	Kinsho et al.	525	527	7/12/1996
5,840,784	11/24/1998	Funkhouser, et al.	523	130	5/7/1997
5,849,401	12/15/1998	El-Afandi et al.	428	215	5/13/1996
5,849,590	12/15/1998	Anderson, II et al	436	27	
5,864,003	1/26/1999	Qureshi et al.	528	141	7/23/1996
5,865,936	2/2/1999	Edelman et al.	156	310	3/28/1997
5,960,877	10/5/1999	Funkhouser, et al.	166	270	7/3/1997
5,977,283	11/2/2000	Rossitto	528	44	4/29/1997
5,994,785	11/30/1999	Higuchi et al.	527	789	05/0/99
6,004,400	12/21/1999	Bishop et al.	134	2	7/9/1997
6,028,113	2/22/2000	Scepanski	514	643	9/27/1995
6,040,398	3/21/2000	Kinsho et al.	525	527	9/2/1998
6,074,739	6/13/2000	Katagiri	428	323	
6,123,871	9/26/2000	Carroll	252	301.36	
6,123,965	9/26/2000	Jacon et al.	424	489	8/18/1998
6,130,286	10/10/2000	Thomas et al.	524	507	12/18/1998

6,135,987	10/24/2000	Tsai et al.	604	365	12/22/1999
6,140,446	10/31/2000	Fujiki et al.	528	15	11/5/1998
6,172,077	1/9/2001	Curtis, et al	514	278	
6,184,311	2/6/2001	O'Keefe et al.	525	438	5/19/1995
6,187,834	2/13/2001	Thayer et al.	522	15	9/8/1999
6,187,839	2/13/2001	Eoff, et al.	523	130	3/3/1999
6,210,471	4/3/2001	Craig	106	31.08	
6,238,597	5/29/2001	Yim et al.	252	512	2/18/2000
6,274,650	8/14/2001	Cui	523	457	9/16/1999
6,311,773	11/6/2001	Todd et al	166	280	1/28/2000
6,367,165	4/9/2002	Huttlin	34	582	2/1/2000
6,376,571	4/23/2002	Chawla et al.	522	64	3/6/1998
6,440,255	8/27/2002	Kohlhammer et al.	156	283	11/23/1999
6,458,885	10/1/2002	Stengal et al.	524	507	5/29/1998
6,616,320	9/9/2003	Huber et al.	366	156.2	7/8/2002
6,648,501	11/8/2003	Huber et al.	366	301	2/12/2001
6,978,836	12/27/2005	Nguyen, et al.	166	295	5/23/2003
6,231,644 B1	5/15/2001	Chatterji et al	106	724	3/8/2000
6,323,307 B1	11/27/2001	Bigg et al	528	354	8/16/1995
6,326,458 B1	12/4/2001	Gruber et al.	528	354	10/7/1993
6,485,947 B1	11/26/2002	Rajgarhia et al.	435	139	5/19/2000
6,608,162 B1	8/19/2003	Chiu et al.	528	129	3/15/2002
6,620,857B2	9/16/2003	Valet	522	42	5/3/2001
6,632,892 B2	10/14/2003	Rubinsztajn et al.	525	476	8/21/2001
6,642,309 B2	11/4/2003	Komitsu et al.	525	100	8/14/2002
6,664,343 B2	12/16/2003	Narisawa et al.	525	474	2/12/2002
6,669,771 B2	12/30/2003	Tokiwa et al.	106	162.7	12/8/2000
6,686,328 B1	2/3/2004	Binder	510	446	7/9/1999
6,713,170 B1	3/30/2004	Kaneka et al.	428	323	8/27/2001
2003/006036	1/9/2003	Malone et al	166	250.12	
2003/0131999A1	7/17/2003	Nguyen et al.	166	280	6/26/2002
2003/0188766A1	10/9/2003	Banerjee et al.	134	7	12/19/2002
2004/0149441A1	8/5/2004	Nguyen et al.	166	280.1	1/30/2003
2005/0006095 A1	1/13/2005	Justus, et al.	166	295	7/8/2003

FOREIGN PATENT DOCUMENTS

DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
					Yes	No
EP0510762 A2	11/28/1992	Europe	C11D	17/00	X	
GB 1,292,718	10/11/1972	United Kingdom	C05G	Mar-00	X	
WO 03/027431A1	4/3/2003	PCT	E21B	43/26	X	
WO 93/15127	8/5/1993	PCT	Co8G	63/06	X	
WO 94/07949	4/14/1994	PCT	CO8G	Nov-00	X	
WO 94/08078	4/14/1994	PCT	D01F	Jun-62	X	
WO 94/08090	4/14/1994	PCT	D21H	19/28	X	

WO 95/09879	4/13/1995	PCT	CO8G	63/08	X
WO 97/11845	4/3/1997	PCT	B32B	27/08	X
NON-PATENT DOCUMENTS					
DOCUMENT (Including Author, Title, Source, and Pertinent Pages)					Date
Advances in Polymer Science, Vol. 157, "Degradable Aliphatic Polyesters" edited by A.-C. Alberston, pages 1-138					2001
Albertsson et al., <i>Aliphatic Polyesters: Synthesis, Properties and Applications</i> , Advances in Polymer Science, vol. 57 Degradable Aliphatic Polyesters					2002
Almond et al., <i>Factors Affecting Proppant Flowback With Resin Coated Proppants</i> , SPE 30096, pages 171-186					May-95
Cantu et al., "Laboratory and Field Evaluation of a Combined Fluid-Loss Control Additive and Gel Breaker for Fracturing Fluids," SPE 18211					1990
CDX Gas, "What is Coalbed Methane?" CDX, LLC. Available @ www.cdxgas.com/what.html , printed page 1					
CDX Gas, CDX Solution, 2003, CDX, LLC, Available @ www.cdxgas.com/solution.html , printed pp 1-2.					
<i>Chelating Agents</i> , Encyclopedia of Chemical Technology, Vol. 5 (764-795)					
Dechy-Cabaret et al., "Controlled Ring-Operated Polymerization of Lactide and Glycolide" American Chemical Society, Chemical Reviews, A-Z, AA-AD					2004
Dusseault et al, "Pressure Pulse Workovers in Heavy Oil", SPE 79033					2002
Felsenthal et al., <i>Pressure Pulsing – An Improved Method of Waterflooding Fractured Reservoirs</i> " SPE 1788					1957
Foreign Search Report and Opinion (PCT Appl. No. GB2004/004242)					6/10/2004
Funkhouser et al., "Synthetic Polymer Fracturing Fluid For High-Temperature Applications", SPE 80236					2003
Gidley et al., "Recent Advances in Hydraulic Fracturing," Chapter 6, pages 109-130					1989
Gorman, <i>Plastic Electric: Lining up the Future of Conducting Polymers</i> Science News, Volume 163					5/17/2003
Halliburton "CobraFrac SM Service, Coiled Tubing Fracturing – Cost-Effective Method for Stimulating Untapped Reserves", 2 pages					2004
Halliburton "CobraJetFrac SM Service, Cost-Effective Technology That Can Help Reduce Cost per BOE Produced, Shorten Cycle time and Reduce Capex"					
Halliburton "SurgiFrac SM Service, a Quick and cost-Effective Method to Help Boost Production From Openhole Horizontal Completions"					2002
Halliburton brochure entitled "INJECTROL® A Component:					1999
Halliburton brochure entitled "H2Zero™ Service Introducing The Next Generation of cost-Effective Conformance Control Solutions".					2002
Halliburton brochure entitled "INJECTROL® G Sealant"					1999
Halliburton brochure entitled "INJECTROL® IT Sealant"					1999
Halliburton brochure entitled "INJECTROL® Service Treatment"					1999
Halliburton brochure entitled "INJECTROL® U Sealant"					1999
Halliburton brochure entitled "Pillar Frac Stimulation Technique" Fracturing Services Technical Data Sheet, 2 pages					
Halliburton brochure entitled "Sanfix® A Resin"					1999
Halliburton Cobra Frac Advertisement					2001
Halliburton Technical Flier – Multi Stage Frac Completion Methods, 2 pages					

Halliburton, <i>CoalStimSM Service, Helps Boost Cash Flow From CBM Assets</i> , Stimulation, HO3679 10/03, 2003, Halliburton Communications	2003
Halliburton, <i>Conductivity Endurance Technology For High Permeability Reservoirs, Helps Prevent Intrusion of Formation Material Into the Proppant Pack for Improved Long-term Production</i> , Stimulation, 2003, Halliburton Communications	2003
Halliburton, <i>Expedite® Service, A Step-Change Improvement Over Conventional Proppant Flowback Control Systems. Provides Up to Three Times the Conductivity of RCPs.</i> , Stimulation, HO3296 05/04, 2004, Halliburton Communications	2004
Halliburton, <i>SandWedge® NT Conductivity Enhancement System, Enhances Proppant Pack Conductivity and Helps Prevent Intrusion of Formation Material for Improved Long-Term Production</i> , Stimulation, HO2289 05/04, 2004, Halliburton Communications	2004
International Search Report, PCT/GB2005/000637, corresponding to U.S. Serial No. 10/791,944	6/2/2005
Kazakov et al., "Optimizing and Managing Coiled Tubing Frac Strings" SPE 60747	2000
Love et al., "Selectively Placing Many Fractures in Openhole Horizontal Wells Improves Production", SPE 50422	1998
McDaniel et al. "Evolving New Stimulation Process Proves Highly Effective In Level 1 Dual-Lateral Completion" SPE 78697	2002
Nguyen et al., <i>A Novel Approach For Enhancing Proppant Consolidation: Laboratory Testing And Field Applications</i> , SPE Paper Number 77748	2002
Nguyen et al., <i>New Guidelines For Applying Curable Resin-Coated Proppants</i> , SPE Paper Number 39582	1997
Owens et al., <i>Waterflood Pressure Pulsing for Fractured Reservoirs</i> " SPE 1123	1966
Peng et al., "Pressure Pulsing Waterflooding in Dual Porosity Naturally Fractured Reservoirs" SPE 17587	1988
Raza, "Water and Gas Cyclic Pulsing Method for Improved Oil Recovery", SPE 3005	1971
Simmons et al., "Poly(phenyllactide): Synthesis, Characterization, and Hydrolytic Degradation, Biomacromolecules", Vol. 2, No. 2, pages 658-663	2001
SPE 15547, <i>Field Application of Lignosulfonate Gels To Reduce Channeling</i> , South Swan Hills Miscible Unit, Alberta, Canada, by O.R. Wagner et al.	1986
Vichaibun et al., "A New Assay for the Enzymatic Degradation of Polylactic Acid, Short Report", ScienceAsia, Vol. 29, pages 297-300	2003
Yang et al., "Experimental Study on Fracture Initiation By Pressure Pulse", SPE 63035	2000
Yin et al., "Preparation and Characterization of Substituted Polylactides", Americal Chemical Society, Vol. 32, No. 23, Pages 7711-7718	1999
Yin et al., "Synthesis and Properties of Polymers Derived from Substituted Lactic Acids", American Chemical Society, Ch.12, pages 147-159	2001

III. Remarks Regarding Rejections Under 35 U.S.C. § 102.

Claims 24-28, 30, 31, 34, 36-45, 47, 48, 51, and 53-57 stand rejected under § 102(b) as being anticipated by U.S. Patent No. 5,368,102 issued to Dewprashad *et al.* (hereinafter "Dewprashad"). Applicant respectfully disagrees because *Dewprashad* does not disclose every element of claims 24-28, 30, 31, 34, 36-45, 47, 48, 51, and 53-57 as required to anticipate these claims under 35 U.S.C. § 102(b). *See MPEP § 2131.*

In particular, *Dewprashad* fails to disclose a “hydrolytically degradable material,” as recited in amended independent claims 24 and 41. Rather than disclosing a material that degrades via hydrolytic degradation, *Dewprashad* is directed to a hardening agent that dissolves when exposed to the elevated temperatures of a subterranean formation. (*Dewprashad*, 9:1-7) *Dewprashad* teaches a material that *dissolves* rather than one that *hydrolytically degrades*. Applicant respectfully submits that hydrolytic degradation, or hydrolysis, differs from dissolution. Specifically, in hydrolytic degradation, a chemical reaction or process takes place in which a molecule is split into two parts by *reacting* with a molecule of *water*. However, when a solute dissolves in a solvent, the solute ions simply disperse in the solvent (which is *not* necessarily water) and *no reaction* takes place. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 657, 1109 (1981); RANDOM HOUSE COMPACT UNABRIDGED DICTIONARY 570, 938 (2d ed. 1996). For example, as is well known in the art, adding weak base ammonia to water would be a hydrolysis reaction because ammonia would react with water to form an ammonium ion and a hydroxide ion. However, adding sodium chloride to water would be classified as dissolving because a solution of sodium ions and chloride ions would result and no reaction would have taken place in the process.

Therefore, Applicant respectfully asserts that independent claims 24 and 41 are not anticipated by *Dewprashad*. Accordingly, independent claims 24 and 41, and the claims that depend therefrom, claims 25-28, 30, 31, 34, 36-40, 42-45, 47, 48, 51, and 53-57, should be allowed.

IV. Remarks Regarding Rejections Under 35 U.S.C. § 103.

A. Dewprashad.

Claims 24, 29, 35, 41, 46, and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Dewprashad*. Applicant respectfully disagrees because the Examiner has not established a *prima facie* case of obviousness as to the claims, in that the cited references do not teach or suggest all the claim limitations. *See MPEP* § 2142.

In particular, as to independent claims 24 and 41, *Dewprashad* does not teach or suggest the recited limitation of a “hydrolytically degradable material.” Rather than disclosing a material that hydrolytically degrades, *Dewprashad* is directed to a material that dissolves in a subterranean formation. As discussed previously in Section III, hydrolytic degradation is

different from dissolution. Accordingly, *Dewprashad* does not teach or suggest a hydrolytically degradable material.

For at least the foregoing reasons, independent claims 24 and 41 are not obviated by *Dewprashad*. Accordingly, Applicant respectfully requests withdrawal of this rejection with respect to independent claims 24 and 41, and correspondingly, as to dependent claims 29, 35, 46, and 52.

B. Dewprashad in view of Murphey.

Claims 24, 33, 41, and 50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Dewprashad* in view of U.S. Patent No. 5,128,390 issued to Murphey *et al.* (hereinafter “*Murphey*”). Applicant respectfully disagrees because the Examiner has not established a *prima facie* case of obviousness as to the claims, in that the cited references do not teach or suggest all the claim limitations. *See MPEP* § 2142.

In particular, as to independent claims 24 and 41, *Dewprashad* does not teach or suggest the recited limitation of a “hydrolytically degradable material.” Rather than disclosing a material that hydrolytically degrades, *Dewprashad* is directed to a material that dissolves in a subterranean formation. As discussed previously in Section III, hydrolytic degradation is different from dissolution. Accordingly, *Dewprashad* does not teach or suggest a hydrolytically degradable material.

Additionally, *Murphey* also fails to supply this missing recitation. Consequently, neither *Dewprashad* nor *Murphey* teach or suggest each and every limitation of independent claims 24 and 41. Accordingly, Applicant respectfully requests withdrawal of this rejection with respect to independent claims 24 and 41, and correspondingly, as to dependent claims 33 and 50.

V. Allowable Subject Matter.

The Examiner has objected to claims 32 and 49 as being dependent upon a rejected base claim, but indicated that such claims would be allowable if rewritten in independent form. (Office Action at 4.) The Applicant gratefully acknowledges the Examiner’s indication of the allowability of these claims.

In light of the above remarks with respect to independent claims 24 and 41, such independent claims are patentable in view of the cited references. Claims 32 and 49 depend either directly or indirectly on their corresponding independent claims. These dependent claims, which include all the limitations of their corresponding independent claims, are allowable for at

least the reasons cited above with respect to independent claims 24 and 41. Accordingly, the Applicants respectfully request withdrawal of this objection with respect to claims 32 and 49.

VI. No Waiver.

All of Applicant's arguments and amendments are without prejudice or disclaimer. Additionally, Applicant has merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicant reserves the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicant does not acquiesce to the Examiner's additional statements, such as, for example, any statements relating to what would be obvious to a person of ordinary skill in the art. The example distinctions discussed by Applicant are sufficient to overcome the anticipation and obviousness rejections.

SUMMARY

In light of the above remarks, Applicant respectfully submits that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicant believes that there are no fees due in association with the filing of this Response. However, should the Commissioner deem that any fees are due, including any fees for extensions of time, the Commissioner is authorized to debit Halliburton Energy Services, Inc., No. 08-0300 for any underpayment of fees that may be due in association with this filing.

Respectfully submitted,



Robert A. Kent
Registration No. 28,626
Halliburton Energy Services, Inc.
2600 South Second Street
P.O. Drawer 1431
Duncan, OK 73536-0440
Telephone: 580-251-3125

Date: December 7, 2006